Look to Food, Not Supplements, for Bone Health

General malnutrition is not uncommon in the United States, especially in patients older than 65 years.

BY KERRI WACHTER
Senior Writer

NEW ORLEANS — With a virtual alphabet soup of vitamin and mineral supplements available—and a constant barrage of new nutritional advice each week—it's a challenge to know what truly bolsters bone health, Neil Binkley, M.D., said at the annual meeting of the International Society for Clinical Densitometry.

General malnutrition is actually a common phenomenon in the United States, said Dr. Binkley, of the Institute on Aging at the University of Wisconsin in Madison. According to one study, 11% of patients older than 65 are undernourished. And some studies have suggested that elderly patients with fractures are more likely to be malnourished. Keeping an eye out for malnourished patients could help reduce the risk of falls and fractures, he said.

Although supplements offer an easy solution, food is still the best source of vitamins and minerals. Dr. Binkley shared the following tips:

Phosphorus

Phosphorus insufficiency is generally not a common problem, but it tends to occur in some of the more vulnerable populations. Phosphorus deficiency decreases mineralization and osteoblast function while increasing osteoclast function.

An estimated 15% of women over age 80 receive less than 70% of the U.S. recommended daily allowance (RDA) of phosphorus (1,000 mg). It has also been suggested that patients who fail to respond to calcium supplementation may, in fact, have inadequate phosphorus intake.

Vitamin D

Make sure patients are aware that not all dairy products are fortified with vitamin D. "You can't get vitamin D in food unless you happen to like liver or lots of salmon or mackerel," Dr. Binkley said.

Vitamin D toxicity is less of a concern than it once was. Recommended levels of vitamin D range from 1,200 to 1,500 IU per day. Levels in excess of 10,000 IU per day are now believed toxic, so there is a large margin of error.

Supplements may be necessary to get enough vitamin D. Dr. Binkley noted that to get 1,000 IU vitamin D, you would need to drink half a gallon of milk or eat 40 egg yolks. Getting a little sun is also an option.

The bigger problem with ensuring that patients get enough vitamin D may be in obtaining a good assay, Dr. Binkley said. In one study, he and his colleagues used four different assays to measure patient vitamin D levels. Although the four methods agreed quite well for some patients, there were big differences among the assays for other patients.

Attempts to standardize vitamin D assays are ongoing. High-performance liquid chromatography (HPLC) appears to provide the best results. Dr. Binkley advised that if HPLC and commercial assays agree that a patient's vitamin D levels are low, they probably are.

But if commercial assays indicate a patient's levels are not low, consider HPLC. He also noted that if you give your patient very high, prescription-level doses (50,000 IU) of vitamin D, at least one of the commercial 25-hydroxy assays only detects about half of it in the blood.

Vitamin A

A family of about 25 compounds constitute vitamin A, but the active component is retinol. The RDA for vitamin A is 2,600 IU (800 mcg) per day for men and 2,300 IU (700 mcg) per day for women.

The effects of getting too much vitamin A are unclear. Generally, it's been assumed that the body has built-in safeguards to avoid vitamin A toxicity.

Yet it's theorized that excessive vitamin A will suppress osteoblast activity and stimulate bone reabsorption. In addition, epidemiologic data suggest that the consumption of more than 5,000 IU daily increases fracture risk—but clinical studies have not confirmed this association.

Dietary sources of vitamin A include liver, fish, and fortified foods such as dairy products; certain fruits and vegetables are high in carotenoids. Vitamin A supplementation is considered necessary only in special situations, and patients should be counseled never to take synthetic retinol.

Vitamin K

Low vitamin K levels have been reported in patients with osteoporotic fractures and epidemiologic data show an increased risk of hip fracture with low levels of vitamin K. But vitamin K doesn't linger in the blood for very long, so it's difficult to get an accurate measure, Dr. Binkley said.

Most of the existing data come from Japan, where a different form of vitamin K is taken from that used in the United States. The Japanese studies used 45 mg per day and showed sustained levels of bone mineral density (BMD) and vertebral fracture–prevention benefits. Adequate intake of vitamin K in the United States, however, is thought to be about 100 mcg per day. It's probably too early to recommend vitamin K supplementation, he concluded.

Magnesium

Inadequate magnesium is associated with decreased parathyroid hormone. Epidemiologic studies suggest a positive association between increased magnesium intake and BMD. But data from the Women's Health Initiative found that high magnesium intake was not protective of BMD.

The bottom line for patients is to eat foods that contain magnesium, including whole grains, vegetables, and nuts. There are no data to support the use of magnesium supplements, Dr. Binkley said.

Caffeine

It's been widely assumed that caffeine is harmful to bone because it leads to increased urinary calcium loss. But several studies have shown that decreased calcium absorption is actually what occurs. "The gist is that for each cup of coffee that we drink, there is a calcium loss of about 5 mg. What does that mean? It means that we need to put about 2 tablespoons of milk in our coffee," Dr. Binkley said.

The effect of other caffeinated beverages on calcium absorption is largely negligible. The bigger issue is that soft drinks have replaced milk in the average American's diet. "What we've done is taken good food and replaced it with carbonated water. The problem is not what they contain but what they don't."

Protein

One study of elderly patients found that patients getting protein supplements were less likely to have fractures. In fact, those with higher protein intake and adequate calcium had the best outcomes, suggesting that there may be a synergistic effect between protein and calcium. There's no need to restrict protein after hip fractures. ■

Pap Smear Cell Patterns May Predict Risk for Excessive Bone Loss

BY DIANA MAHONEY
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HARROGATE, ENGLAND — Women whose Pap smears reveal atrophic cell patterns may be at greater risk for osteopenia and osteoporosis than women whose smears show mature cell patterns, a study has shown.

The findings suggest that routine Pap testing could be a useful and inexpensive screening tool for identifying women at risk for the degenerative bone disorders, Alenka Repse-Fokter, M.D., reported in a poster presentation at the annual conference of the National Osteoporosis Society.

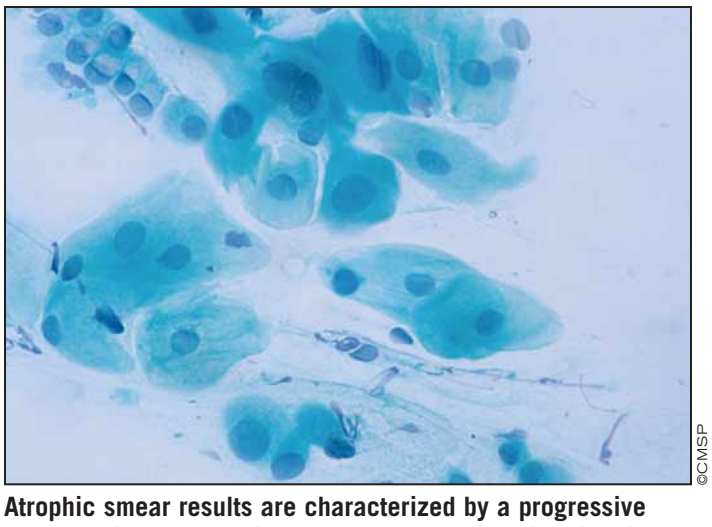
Given limited medical resources, the ability to use an already existing and widely performed screening protocol to help identify women with osteoporosis "would be highly appreciated," she said.

Dr. Repse-Fokter and colleagues at Celje (Slovenia) General Hospital assessed the Pap smear results and dual-energy x-ray absorptiometry (DXA) bone density measurements of 66 women aged 46-67 years. The women had received the Pap smears for routine cervical cancer screening and were invited to undergo bone mineral density measurement as part of the investigation. None of the women used hormonal contraception or hormone therapy.

The investigators grouped the smears into atrophic and mature cell patterns, which can be easily recognized during the screening for cervical dysplasia or cancer, Dr. Repse-Fokter said. "In routine light microscopy, atrophic cells appear much smaller than cells in mature smear patterns," she noted. The smear patterns were then compared with the patients' T values measured by DXA on the femoral neck and lumbar spine.

Overall, the T scores were significantly lower in the atrophic smear group. Of the 33 women with atrophic smears, 13 had osteopenia and 15 had osteoporosis. Among the 33 women whose smears showed mature cell patterns, 9 had osteopenia and 24 had normal bone density. The sensitivity, specificity, and positive predictive value of the findings were, respectively, 76%, 83%, and 85%.

The findings of a correlation between smear patterns and degenerative bone disease support the investigators' findings from a previous study that revealed a highly significant association between atrophic smear patterns and low bone mineral density.



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Atrophic smear results are characterized by a progressive degeneration and wasting of the cells, as seen in this slide.

"This means that a significant number of women with low bone mineral density who are at high risk [for osteoporotic disease] could be identified in parallel with routine Pap testing for cervical cancer screening without added costs," Dr. Repse-Fokter said.

Although further studies on larger populations are needed, "we strongly suggest that women with atrophic Pap smear patterns be closely followed as recommended by the American National Osteoporosis Foundation," according to Dr. Repse-Fokter and her colleagues. ■